Set	Items	Description
S1	1499	CHIMER?(4N)OLIGONUCLEOTIDE?
S2	86	S1 AND (MUTAT? OR MUTAGEN?) AND PLANT?
S3	25	RD (unique items)

>>>KWIC option is not available in file(s): 41, 77, 399

3/3,K/1 (Item 1 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)

13095296 BIOSIS NO.: 200100302445

In vitro and in vivo nucleotide exchange directed by *chimeric* RNA/DNA *oligonucleotides* in Saccharomyces cerevisae.

AUTHOR: Rice Michael C; Bruner Michael; Czymmek Kirk; Kmiec Eric B(a)
AUTHOR ADDRESS: (a)Department of Biological Sciences, Delaware Biotechnology Institute, University of Delaware, Newark, DE, 19716: ekmiec@udel.edu**USA

JOURNAL: Molecular Microbiology 40 (4):p857-868 May, 2001
MEDIUM: print
ISSN: 0950-382X
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

In vitro and in vivo nucleotide exchange directed by *chimeric* RNA/DNA *oligonucleotides* in Saccharomyces cerevisae.

ABSTRACT: Targeted gene repair directed by *chimeric* RNA/DNA *oligonucleotides* has proven successful in eukaryotic cells including animal and *plant* models. In many cases, however, there has been a disparity in the levels of gene correction or frequency. While the delivery of these chimera into...

...conversion whereas RAD52 appears to act, surprisingly, in a suppressive fashion. Results from the in vitro experiments were translated into targeting experiments in vivo. Here, *mutations* in a fusion construct, containing a marker gene, were converted to wild type, evidenced by the expression of green fluorescence in converted cells. Because the...

DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Fungi, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Nonvascular *Plants*; *Plants*

3/3,K/2 (Item 2 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)

13019017 BIOSIS NO.: 200100226166

The potential of nucleic acid repair in functional genomics.

AUTHOR: Rice Michael C; Czymmek Kirk; Kmiec Eric B(a)
AUTHOR ADDRESS: (a)Department of Biological Science, University of Delaware, Newark, DE, 19716: ekmiec@udel.edu**USA

JOURNAL: Nature Biotechnology 19 (4):p321-326 April, 2001
MEDIUM: print
ISSN: 1087-0156
DOCUMENT TYPE: Literature Review
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

ABSTRACT: *Chimeric* RNA/DNA *oligonucleotides* have been used successfully to correct point and frameshift *mutations* in cells as well as in animal and *plant* models. This approach is one of several nucleic acid repair technologies that will help elucidate the function of newly discovered genes. Understanding the mechanisms by...

DESCRIPTORS:
...BIOSYSTEMATIC NAMES: *Plantae*
...ORGANISMS: *plant* (*Plantae*)
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*
MISCELLANEOUS TERMS: frameshift *mutations*; ...

...point *mutations*
BIOSYSTEMATIC CODES:
11000 *Plantae*-Unspecified...

3/3,K/3 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12842381 BIOSIS NO.: 200100049530
The DNA strand of *chimeric* RNA/DNA *oligonucleotides* can direct gene repair/conversion activity in mammalian and *plant* cell-free extracts.
AUTHOR: Gamper Howard B; Parekh Hetal; Rice Michael C; Bruner Michael; Youkey Heather; Kmiec Eric B(a)
AUTHOR ADDRESS: (a)Department of Biological Sciences, University of Delaware, 105 Wolf Hall, Newark, DE, 19716: ekmiec@udel.edu**USA
JOURNAL: Nucleic Acids Research 28 (21):p4332-4339 November 1, 2000
MEDIUM: print
ISSN: 0305-1048
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

The DNA strand of *chimeric* RNA/DNA *oligonucleotides* can direct gene repair/conversion activity in mammalian and *plant* cell-free extracts.

ABSTRACT: *Chimeric* *oligonucleotides* (*chimeras*), consisting of RNA and DNA bases folded by complementarity into a double hairpin conformation, have been shown to alter or repair single bases in *plant* and animal genomes. An uninterrupted stretch of DNA bases within the chimera is known to be active in the sequence alteration while RNA residues aid...

...of all RNA or DNA residues and various mixtures, several new structures have emerged as viable molecules in nucleotide conversion. When extracts from mammalian and *plant* cells and a genetic readout assay in bacteria are used, single-stranded oligonucleotides, containing a defined number of thioate backbone modifications, were found to be...

...structure in the process of gene repair. Single-stranded oligonucleotides containing fully modified backbones were found to have low repair activity and in fact induce *mutation*. Molecules containing various lengths of modified RNA bases (2'-O-methyl) were also found to possess low activity. Taken together, these results confirm the directionality of nucleotide conversion by the DNA strand of the chimera and further present a novel, modified single-stranded DNA molecule that directs conversion in *plant* and animal cell-free extracts.

3/3,K/4 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12592846 BIOSIS NO.: 200000346348
Engineering herbicide-resistant maize using *chimeric* RNA/DNA *oligonucleotides*.
AUTHOR: Zhu Tong; Mettenburg Kathryn; Peterson David J; Tagliani Laura; Baszczynski Chris L(a)
AUTHOR ADDRESS: (a)Trait and Technology Development, Pioneer Hi-Bred International, Inc., 7250 NW 62nd Ave., Johnston, IA, 50131-0552**USA
JOURNAL: Nature Biotechnology 18 (5):p555-558 May, 2000

MEDIUM: print
ISSN: 1087-0156
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

Engineering herbicide-resistant maize using *chimeric* RNA/DNA *oligonucleotides*.

ABSTRACT: Maize *plants* resistant to imidazolinone herbicides were engineered through targeted modification of endogenous genes using *chimeric* RNA/DNA *oligonucleotides*. A precise single-point *mutation* was introduced into genes encoding acetohydroxyacid synthase (AHAS), at a position known to confer imidazolinone resistance. Phenotypically normal *plants* from the converted events (C0) were regenerated from resistant calli and grown to maturity. Herbicide leaf painting confirmed the resistance phenotype in C0 *plants* and demonstrated the anticipated segregation pattern in C1 progeny. DNA cloning and sequencing of the targeted region in resistant calli and derived C0 and C1 *plants* confirmed the expected *mutation*. These results demonstrate that oligonucleotide-mediated gene manipulation can be applied to crop improvement. This approach does not involve genomic integration of transgenes. Since the...
DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*
CHEMICALS & BIOCHEMICALS: *chimeric* RNA-DNA *oligonucleotides*;

3/3,K/5 (Item 5 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12571000 BIOSIS NO.: 200000324502
Genetic repair of *mutations* in *plant* cell-free extracts directed by specific *chimeric* *oligonucleotides*.
AUTHOR: Rice Michael C; May Gregory D; Kipp Peter B; Parekh Hetal; Kmiec Eric B(a)
AUTHOR ADDRESS: (a)Department of Biological Sciences, University of Delaware, Newark, DE, 19716**USA
JOURNAL: Plant Physiology (Rockville) 123 (2):p427-437 June, 2000
MEDIUM: print
ISSN: 0032-0889
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

Genetic repair of *mutations* in *plant* cell-free extracts directed by specific *chimeric* *oligonucleotides*.

ABSTRACT: *Chimeric* *oligonucleotides* are synthetic molecules comprised of RNA and DNA bases assembled in a double hairpin conformation. These molecules have been shown to direct gene conversion events...
...gene repair in mammalian cells has been partially elucidated through the use of a cell-free extract system. Recent experiments have expanded the utility of *chimeric* *oligonucleotides* to *plants* and have demonstrated genotypic and phenotypic conversion, as well as Mendelian transmission. Although these experiments showed correction of point and frameshift *mutations*, the biochemical and mechanistic aspects of the process were not addressed. In this paper, we describe the establishment of cell-free extract systems from maize (Zea mays), banana (Musa acuminata cv Rasthali), and tobacco (Nicotiana tabacum). Using a genetic

readout system in bacteria and *chimeric* *oligonucleotides* designed to direct the conversion of *mutations* in antibiotic-resistant genes, we demonstrate gene repair of point and frameshift *mutations*. Whereas extracts from banana and maize catalyzed repair of *mutations* in a precise fashion, cell-free extracts prepared from tobacco exhibited either partial repair or non-targeted nucleotide conversion. In addition, an all-DNA hairpin molecule also mediated repair albeit in an imprecise fashion in all cell-free extracts tested. This system enables the mechanistic study of gene repair in *plants* and may facilitate the identification of DNA repair proteins operating in *plant* cells.
DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta, *Plantae*; ...
...Monocotyledones, Angiospermae, Spermatophyta, *Plantae*; ...

...Dicotyledones, Angiospermae, Spermatophyta, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*
MISCELLANEOUS TERMS: ...*mutations*--...

...*plant* cell-free extracts

3/3,K/6 (Item 6 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12083069 BIOSIS NO.: 199900377918
A tool for functional *plant* genomics: *Chimeric* RNA/DNA *oligonucleotides* cause in vivo gene-specific *mutations*.
AUTHOR: Beetham Peter R; Kipp Peter B; Sawycky Xenia L; Arntzen Charles J; May Gregory D(a)
AUTHOR ADDRESS: (a)Samuel Roberts Noble Foundation, 2510 Sam Noble Parkway, Ardmore, OK, 73402**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United States of America 96 (15):p8774-8778 July 20, 1999
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

A tool for functional *plant* genomics: *Chimeric* RNA/DNA *oligonucleotides* cause in vivo gene-specific *mutations*.

ABSTRACT: Self-complementary *chimeric* *oligonucleotides* (COs) composed of DNA and modified RNA residues were evaluated as a means to (i) create stable, site-specific base substitutions in a nuclear gene and (ii) introduce a frameshift in a nuclear transgene in *plant* cells. To demonstrate the creation of allele-specific *mutations* in a member of a gene family, COs were designed to target the codon for Pro-196 of SuRA, a tobacco acetolactate synthase (ALS) gene. An amino acid substitution at Pro-196 of ALS confers a herbicide-resistance phenotype that can be used as a selectable marker in *plant* cells. COs were designed to contain a 25-nt homology domain comprised of a five-deoxyribonucleotide region (harboring a single base mismatch to the native...

...loci by catalyzing either a base substitution or a base addition to specific nuclear genes; this approach should have great utility in the area of *plant* functional genomics.
DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Dicotyledones, Angiospermae, Spermatophyta, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*

CHEMICALS & BIOCHEMICALS: *chimeric* RNA/DNA *oligonucleotides*--...

...acetolactate synthase gene, site-specific *mutation*

3/3,K/7 (Item 7 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

12083068 BIOSIS NO.: 199900377917
Targeted manipulation of maize genes in vivo using *chimeric* RNA/DNA *oligonucleotides*.
AUTHOR: Zhu Tong; Peterson David J; Tagliani Laura; St Clair Grace; Baszczynski Chris L(a); Bowen Ben
AUTHOR ADDRESS: (a)Trait and Technology Development, Pioneer Hi-Bred International, Inc., 7250 N.W. 62nd Avenue, Jo**USA
JOURNAL: Proceedings of the National Academy of Sciences of the United States of America 96 (15):p8768-8773 July 20, 1999
ISSN: 0027-8424
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English
SUMMARY LANGUAGE: English

Targeted manipulation of maize genes in vivo using *chimeric* RNA/DNA *oligonucleotides*.

ABSTRACT: Site-specific heritable *mutations* in maize genes were engineered by introducing *chimeric* RNA/DNA *oligonucleotides*. Two independent targets within the endogenous maize acetohydroxyacid synthase gene sequence were modified in a site-specific fashion, thereby conferring resistance to either imidazolinone or...

...herbicides. Similarly, an engineered green fluorescence protein transgene was site-specifically modified in vivo. Expression of the introduced inactive green fluorescence protein was restored, and *plants* containing the modified transgene were regenerated. Progeny analysis indicated Mendelian transmission of the converted transgene. The efficiency of gene conversion mediated by *chimeric* *oligonucleotides* in maize was estimated as 10-4, which is 1-3 orders of magnitude higher than frequencies reported for gene targeting by homologous recombination in *plants*. The heritable changes in maize genes engineered by this approach create opportunities for basic studies of *plant* genefunction and agricultural trait manipulation and also provide a system for studying mismatch repair mechanisms in maize.
DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Monocotyledones, Angiospermae, Spermatophyta, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): *Plants*; ...

...Vascular *Plants*
CHEMICALS & BIOCHEMICALS: *chimeric* RNA/DNA *oligonucleotides*--

3/3,K/8 (Item 8 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)

11312086 BIOSIS NO.: 199800093418
Cloning-free PCR-based allele replacement methods.
AUTHOR: Erdeniz Naz; Mortensen Uffe H; Rothstein Rodney(a)
AUTHOR ADDRESS: (a)Dep. Genet. and Dev., Columbia Univ., Coll. Phys. and Surgeons, New York, NY 10032-2704**USA
JOURNAL: Genome Research 7 (12):p1174-1183 Dec., 1997
ISSN: 1088-9051
DOCUMENT TYPE: Article
RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Efficient homologous recombination permits the directed introduction of specific *mutations* into the yeast genome. Here we describe a cloning-free, PCR-based allele replacement method that simplifies allele transfer between yeast strains. The desired allele...

...single copy of the new allele in the target strain. Specifically, the desired allele is amplified by PCR with a pair of adaptamers, which are *chimeric* *oligonucleotides* that are used to amplify the allele and differentially tag its 5' and 3' ends. These tags allow the directed fusion to two different, but...
...only the desired allele is retained as a result of direct repeat recombination. A simple modification of this method allows the creation of de novo *mutations* in the genome.
DESCRIPTORS:
...BIOSYSTEMATIC NAMES: Fungi, *Plantae*
...BIOSYSTEMATIC CLASSIFICATION (SUPER TAXA): Nonvascular *Plants*; *Plants*
CHEMICALS & BIOCHEMICALS: *chimeric* *oligonucleotides*

3/3,K/9 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09912102 Genuine Article#: 463FQ No. References: 21
Title: Chloroplast lysates support directed *mutagenesis* via modified DNA and *chimeric* RNA/DNA *oligonucleotides*
Author(s): Kmiec EB; Johnson C; May GD (REPRINT)
Corporate Source: Samuel Roberts Noble Fdn Inc,Div Plant Biol,2510 Sam Noble Pkwy/Ardmore//OK/73401 (REPRINT); Samuel Roberts Noble Fdn Inc,Div Plant Biol,Ardmore//OK/73401; Univ Delaware,Dept Biol Sci,Newark//DE/19716
Journal: PLANT JOURNAL, 2001, V27, N3 (AUG), P267-274
ISSN: 0960-7412 Publication date: 20010800
Publisher: BLACKWELL SCIENCE LTD, P O BOX 88, OSNEY MEAD, OXFORD OX2 0NE, OXON, ENGLAND
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Chloroplast lysates support directed *mutagenesis* via modified DNA and *chimeric* RNA/DNA *oligonucleotides*
...Abstract: gene-conversion events in vitro through a process involving proteins from several DNA-repair pathways. Recent experiments have extended the utility of these molecules to *plants*, and we previously demonstrated that *plant* cell-free extracts are competent to support oligonucleotide-directed genetic repair. Using this system, we are studying Arabidopsis DNA-repair mutants and the role of *plant* proteins in the DNA-repair process. Here we describe a method for investigating mechanisms of plastid DNA-repair pathways. Using a genetic readout system in bacteria and *chimeric* or modified DNA *oligonucleotides* designed to direct the conversion of *mutations* in antibiotic resistance genes, we have developed an assay for genetic repair of *mutations* in a spinach chloroplast lysate system. We report genetic repair of point and frameshift *mutations* directed by both types of modified oligonucleotides. This system enables the mechanistic study of plastid gene repair and facilitates the direct comparison between *plant* nuclear and organelle DNA-repair pathways.
...Identifiers--ESCHERICHIA-COLI RECA; TARGETED GENE REPAIR; CELL-FREE-EXTRACTS; RECOMBINATION; ORGANIZATION; *MUTATIONS; *SEQUENCE; MUTANTS; GENOME

3/3,K/10 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09791125 Genuine Article#: 447WZ No. References: 5
Title: A tool for site-specific gene repairing: Chimerplasty
Author(s): Ouyang LM; Zhang SL; Liu ZM
Corporate Source: E China Univ Sci & Technol,Coll Bioengn,Shanghai 200237//Peoples R China/; Acad Mil Med Sci,Inst Biotechnol,Beijing 100071//Peoples R China/
Journal: PROGRESS IN BIOCHEMISTRY AND BIOPHYSICS, 2001, V28, N3 (JUN), P 322-325
ISSN: 1000-3282 Publication date: 20010600
Publisher: SCIENCE PRESS, 16 DONGHUANGCHENGGEN NORTH ST, BEIJING 100717, PEOPLES R CHINA
Language: Chinese Document Type: ARTICLE (ABSTRACT AVAILABLE)

...Abstract: gene therapy, without changing the whole gene. Chimeraplasty is a tool for site-specific gene repairing which developed rapidly in recent years. The RNA/DNA *chimeric* *oligonucleotide* can located to the exact site and repair the wrong base in situ by complementing to the host chromosome DNA sequence, and it can also be used to produce targeted *mutation*. It has been successfully applied in the gene therapy of some single gene genopathy and *plant* genetical modification. The principle, examples and prospect of this technique was described.

3/3,K/11 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09734490 Genuine Article#: 443VF No. References: 34
Title: Targeted correction of the point *mutations* of beta-thalassemia and targeted *mutagenesis* of the nucleotide associated with HPFH by RNA/DNA oligonucleotides: Potential for beta-thalassemia gene therapy
Author(s): Li ZH; Liu DP (REPRINT) ; Yin WX; Guo ZC; Liang CC
Corporate Source: Chinese Acad Med Sci,Inst Basic Med Sci, Natl Lab Med Mol Biol,Beijing 10005//Peoples R China/ (REPRINT); Chinese Acad Med Sci,Inst Basic Med Sci, Natl Lab Med Mol Biol,Beijing 10005//Peoples R China/; Peking Union Med Coll,Beijing 10005//Peoples R China/
Journal: BLOOD CELLS MOLECULES AND DISEASES, 2001, V27, N2 (MAR-APR), P 530-538
ISSN: 1079-9796 Publication date: 20010300
Publisher: ACADEMIC PRESS INC, 525 B ST, STE 1900, SAN DIEGO, CA 92101-4495 USA
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Targeted correction of the point *mutations* of beta-thalassemia and targeted *mutagenesis* of the nucleotide associated with HPFH by RNA/DNA oligonucleotides: Potential for beta-thalassemia gene therapy
Abstract: An RNA/DNA *chimeric* *oligonucleotide* was found to be effective in the targeted correction of point *mutations* in Escherichia coli, *plant*, and mammalian genomes. This strategy, named chimeraplasty, has the potential for gene therapy of many genetic diseases caused by point *mutations*. beta -Thalassemia is a very common human genetic disease and in most cases it is caused by point *mutations*. To lest whether the chimeraplasty can be used to correct the point *mutations* responsible for beta -thalassemia, we introduced one *mutated* beta -globin gene, betaE, into MEL cells and successfully corrected the point *mutation* of the betaE gene with the highest correction efficiency of 1.9%. Furthermore, a targeted -202C -->G *mutation* of the G gamma -globin gene, which is associated with the elevated C gamma -globin gene expression in the adult stage, was introduced into HeLa...

3/3,K/12 (Item 4 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

09691196 Genuine Article#: 435PG No. References: 80

Title: Genetic modification and *plant* food allergens: risks and benefits
Author(s): Shewry PR (REPRINT) ; Tatham AS; Halford NG
Corporate Source: Univ Bristol,Dept Agr Sci, IACR, Long Ashton Res Stn,Bristol BS41 9AF/Avon/England/ (REPRINT); Univ Bristol,Dept Agr Sci , IACR, Long Ashton Res Stn,Bristol BS41 9AF/Avon/England/
Journal: JOURNAL OF CHROMATOGRAPHY B, 2001, V756, N1-2 (MAY 25), P327-335
ISSN: 0378-4347 Publication date: 20010525
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS
Language: English Document Type: REVIEW (ABSTRACT AVAILABLE)

Title: Genetic modification and *plant* food allergens: risks and benefits
Abstract: *Plant* genetic engineering has the potential to both introduce new allergenic proteins into foods and remove established allergens. A number of allergenic *plant* proteins have been characterized, showing that many are related to proteins which have potentially valuable properties for use in nutritional enhancement, food processing and crop protection. It is therefore important to monitor the allergenic potential of proteins used for *plant* genetic engineering and major biotechnology companies have established systems for this. Current technology allows gene expression to be down-regulated using antisense or co-suppression and future developments may allow targeted gene *mutation* or gene replacement. However, the application of this technology may be limited at least in the short term by the presence of multiple allergens and...
...Identifiers--LIPID-TRANSFER PROTEINS; *CHIMERIC* RNA/DNA *OLIGONUCLEOTIDES*; AMINO-ACID-SEQUENCE; SOYBEAN-SENSITIVE PATIENTS; TRYPSIN-INHIBITOR FAMILY; BERTHOLLETIA-EXCELSA HBK; ALBUMIN STORAGE PROTEINS; BIRCH POLLEN ALLERGEN; SULFUR-RICH PROTEIN; ALPHA-AMYLASE

3/3,K/13 (Item 5 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08665393 Genuine Article#: 313ZB No. References: 47
Title: Exploring the possibilities presented by protein engineering
Author(s): Shanklin J (REPRINT)
Corporate Source: BROOKHAVEN NATL LAB,DEPT BIOL, BLDG 463, 50 BELL AVE/UPTON//NY/11786 (REPRINT)
Journal: CURRENT OPINION IN PLANT BIOLOGY, 2000, V3, N3 (JUN), P243-248
ISSN: 1369-5266 Publication date: 20000600
Publisher: CURRENT BIOLOGY LTD, 84 THEOBALDS RD, LONDON WC1X 8RR, ENGLAND
Language: English Document Type: REVIEW (ABSTRACT AVAILABLE)

...Abstract: enzyme activities and creation of proteins that are tailored to have specific properties. These technologies have far-reaching consequences for the future design of crop *plants* and the storage compounds within them.
...Identifiers--*CHIMERIC* RNA/DNA *OLIGONUCLEOTIDES*; IN-VITRO EVOLUTION; DIRECTED EVOLUTION; SUBSTRATE-SPECIFICITY; RANDOM *MUTAGENESIS*; DIIRON PROTEINS; SUBTILISIN-E; DESIGN; DESATURASE; GENES

3/3,K/14 (Item 1 from file: 76)
DIALOG(R)File 76:Life Sciences Collection

02603278 5111715
Oligonucleotide-directed *plant* gene targeting
Oh, T.J.; May, G.D.
Plant Biology Division, The Samuel Roberts Noble Foundation, 2510 Sam Noble Parkway, Ardmore, OK 73402, USA
Current Opinion in Biotechnology vol. 12, no. 2, pp. 169-172 (2001)
ISSN: 0958-1669
DOCUMENT TYPE: Journal article; Review article LANGUAGE: ENGLISH
SUBFILE: Agricultural and Environmental Biotechnology Abstracts

Oligonucleotide-directed *plant* gene targeting

Chimeric RNA/DNA *oligonucleotides* (COs) have been used to cause site-specific base changes in episomal and chromosomal targets in mammalian and *plant* cells. These molecules are designed to pair with homologous sequences or target sites in genomic DNA, and thus can be used to introduce a base change in known DNA sequences. The ability to target and generate site-specific gene modifications in *plant* species gives researchers the capability to enhance a number of value-added traits in ways not possible with current recombinant DNA technologies. With the tremendous...
...the modifications are made to endogenous genes. Positional effects and the onset of gene silencing should not mitigate these results. An in vivo site-specific *mutagenesis* system for *plants* may have broad industrial applications as well. The modification of lipid biosynthetic pathways, herbicide tolerance, and the directed evolution of industrial enzymes are all within...
DESCRIPTORS: Gene targeting; *Plants*; RNA; DNA; Reviews; oligonucleotides

3/3,K/15 (Item 2 from file: 76)
DIALOG(R)File 76:Life Sciences Collection

02401877 4602693
The greening of *chimeric* *oligonucleotides*
Feldmann, K.A.
Ceres, 3007 Malibu Canyon Road., Malibu, CA 90265, USA
Nature Biotechnology vol. 17, no. 9, pp. 857-858 (1999)
ISSN: 1087-0156
DOCUMENT TYPE: Journal article; Review article LANGUAGE: ENGLISH
SUBFILE: Agricultural and Environmental Biotechnology Abstracts

The greening of *chimeric* *oligonucleotides*

The era of genomics is rapidly delivering to our desktops the sequence of every gene in a number of *plant* genomes. These sequences will certainly advance our understanding of *plant* genetics, but they alone will not provide a clear indication of gene function. For this purpose, a mutant corresponding to each gene will be the single most valuable tool. Two recent PNAS papers describe a new approach for introducing targeted *mutations* into *plant* genes. Researchers at Pioneer (Des Moines, IA) and Boyce Thompson Institute (Ithaca, NY) have independently shown that *chimeric* *oligonucleotides*, previously heralded as promising gene therapy reagents in mammalian systems, can be used to induce specific base changes in target genes of corn cell line...
DESCRIPTORS: Gene targeting; Reviews; *Chimeras*; *oligonucleotides*; Zea mays; Nicotiana tabacum
...SECTION HEADING: *Plants*; 32000

3/3,K/16 (Item 3 from file: 76)
DIALOG(R)File 76:Life Sciences Collection

02397171 4569817
Gene therapy in *plants*
Hohn, B.; Puchta, H.
Friedrich Miescher Institut, P.O. Box 2543, CH-4002 Basel Switzerland
Proceedings of the National Academy of Sciences, USA vol. 96, no. 15, pp. 8321-8323 (1999)
ISSN: 0027-8424
DOCUMENT TYPE: Journal article LANGUAGE: ENGLISH
SUBFILE: Genetics Abstracts

Gene therapy in *plants*

...of gene function through the analysis of gene malfunction. Modern

genetics and genomics require ways for in situ modification of genes, by means of point *mutations*, deletions, and additions. The availability of sequence information of many organisms dictates rapid development of reverse genetics procedures. Until recently, targeting of genes with the...

...homologous recombination-dependent gene targeting (hrdGT), was the method of choice, at least for mammalian systems. However, in higher eukaryotic organisms such as mammals and *plants*, exogenously introduced DNA preferably integrates in random positions in the genome, by the process of illegitimate recombination, and only infrequently can targeted integration events be detected. Recently an alternative strategy became available for precise reverse genetics. Specific *chimeric* *oligonucleotides*, COs, consisting of DNA and RNA stretches, were found to induce point *mutations* in several mammalian genes tested (see below). This technique, here referred to as *chimeric* *oligonucleotide*-dependent mismatch repair, cdMMR, has now been used for *plants*: this issue of the Proceedings includes two reports describing stable changes in the genomes of tobacco and maize after treatment with *chimeric* *oligonucleotides*.

3/3,K/17 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

14617522 PASCAL No.: 00-0287662
Engineering herbicide-resistant maize using *chimeric* RNA/DNA *oligonucleotides*
TONG ZHU; METTENBURG K; PETERSON D J; TAGLIANI L; BASZCZYNSKI C L
Trait & Technology Development, Pioneer Hi-Bred International, Inc., 7250 NW 62nd Ave., Johnston, IA 50131-0552, United States
Journal: Nature biotechnology, 2000, 18 (5) 555-558
Language: English

Engineering herbicide-resistant maize using *chimeric* RNA/DNA *oligonucleotides*
Maize *plants* resistant to imidazolinone herbicides were engineered through targeted modification of endogenous genes using *chimeric* RNA/DNA *oligonucleotides*. A precise single-point *mutation* was introduced into genes encoding acetohydroxyacid synthase (AHAS), at a position known to confer imidazolinone resistance. Phenotypically normal *plants* from the converted events (C SUB 0) were regenerated from resistant calli and grown to maturity. Herbicide leaf painting confirmed the resistance phenotype in C SUB 0 *plants* and demonstrated the anticipated segregation pattern in C SUB 1 progeny. DNA cloning and sequencing of the targeted region in resistant calli and derived C SUB 0 and C SUB 1 *plants* confirmed the expected *mutation* . These results demonstrate that oligonucleotide-mediated gene manipulation can be applied to crop improvement. This approach does not involve genomic integration of transgenes. Since the...

English Descriptors: *Mutagenesis*; Resistance; Inheritance(genetics); Point *mutation*; Enzyme; Zea mays; Gene; Oligonucleotide; Cereal crop; Herbicide

French Descriptors: *Mutagenese*; Resistance; Heredite; *Mutation* ponctuelle; Enzyme; Zea mays; Gene; Oligonucleotide; *Plante* cerealiere; Herbicide; acetohydroxyacid synthase

Spanish Descriptors: *Mutagenesis*; Resistencia; Herencia(genetica); Mutacion puntual; Enzima; Zea mays; Gen; Oligonucleotido; *Planta* cerealista; Herbicida

3/3,K/18 (Item 1 from file: 266)
DIALOG(R)File 266:FEDRIP

00298954
IDENTIFYING NO.: 1R01CA89325-01A1 AGENCY CODE: CRISP
Regulation of Targeted Gene Correction
PRINCIPAL INVESTIGATOR: GAMPER, HOWARD B
ADDRESS: UNIVERSITY OF DELAWARE WOLF HALL NEWARK, DE 19716
PERFORMING ORG.: UNIVERSITY OF DELAWARE, NEWARK, DELAWARE
SPONSORING ORG.: NATIONAL CANCER INSTITUTE
FY : 2001

SUMMARY: Chimeric DNAJRNA double hairpins are synthetic oligonucleotides that direct targeted nucleotide substitutions in bacteria, yeast, *plants* and animals. We have postulated that cellular recombinases catalyze joint molecule formation between these oligonucleotides and homologous dsDNA. According to our model, resolution of these joints can be accompanied by point *mutation* of the target DNA when the oligonucleotide is mismatched within the intermediate joint. Since chimeric hairpins are effective gene repair agents in yeast, we propose...

...with whole cells, cell-free extracts, and purified protein with the goal of delineating the mechanism of joint molecule formation and gene substitution or frameshift *mutations* in yeast will be monitored by targeting episomal or chromosomal genes that express a fluorescent signal or an antibiotic resistance marker. Targeting of the episomal...

... base will be used as substrates to study targeted nucleotides exchange. The mechanism which emerges from this study should provide guidance in the use of *chimeric* hairpin *oligonucleotides* in other systems including *plant*, animal and human cells.
DESCRIPTORS: psoralen; cell free system; crosslink; drug resistance; yeast; fusion gene; fungal genetics; frameshift *mutation*; point *mutation*; synapse; transposon /insertion element; DNA repair; oligonucleotide; bacterial protein; DNA binding protein; fungal protein

3/3,K/19 (Item 2 from file: 266)
DIALOG(R)File 266:FEDRIP

00286327
IDENTIFYING NO.: 5R29AI39201-05 AGENCY CODE: CRISP
REARRANGEMENT MECHANISMS OF CRITHIDIA RETROTRANSPOSONS
PRINCIPAL INVESTIGATOR: GABRIEL, ABRAM
ADDRESS: RUTGERS-STATE UNIV OF NEW JERS 679 HOES LANE PISCATAWAY, NJ 08855
PERFORMING ORG.: RUTGERS THE ST UNIV OF NJ NEW BRUNSWICK, NEW BRUNSWICK, NEW JERSEY
SPONSORING ORG.: NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES
FY : 2001

...SUMMARY: CRE2. CRE-elements are members of the little understood family of mobile genes known as non-LTR retrotransposons that are widely distributed in mammals, insects, *plants* , trypanosomatids, and fungi. Evidence suggests that this class of transposon is involved in such diverse processes as genome evolution, pseudogene formation, and human genetic disease...
DESCRIPTORS: eukaryote; polymerase chain reaction; site directed *mutagenesis*; genetic mapping; genetic marker; molecular cloning; gene rearrangement; open reading frame; restriction fragment length polymorphism ; gene conversion; western blotting; transposon /insertion element; nucleic acid sequence; *oligonucleotide*; RNA directed DNA polymerase; *chimeric* protein; Crithidia; northern blotting; southern blotting; enzyme activity; gel mobility shift assay; gene targeting

3/3,K/20 (Item 1 from file: 357)

DIALOG(R)File 357:Derwent Biotechnology Abs

0240970 DBA Accession No.: 99-10544 PATENT

***Chimeric* *oligonucleotide* used to introduce targeted alterations or mismatches into the genomes of *plants*- targeted maize 3-phosphoshikimate-1-carboxyvinyltransferase, acetohydroxy-acid-synthase *mutagenesis* method, useful for producing herbicide resistance to e.g. sulfonylurea**

AUTHOR: Baszczynski C L; Duesing J H; Peterson D J; Tagliani L A; Zhu T ; Bowen B A

CORPORATE SOURCE: Des Moines, IA, USA.

PATENT ASSIGNEE: Pioneer-Hi-Bred-Int. 9999

PATENT NUMBER: WO 9925853 PATENT DATE: 99990527 WPI ACCESSION NO.: 99-357619 (9930)

PRIORITY APPLIC. NO.: -0 9898235 APPLIC. DATE: 98-90828

NATIONAL APPLIC. NO.: WO 98 a24484 APPLIC. DATE: 98 a1116

LANGUAGE: English

***Chimeric* *oligonucleotide* used to introduce targeted alterations or mismatches into the genomes of *plants*- targeted maize 3-phosphoshikimate-1-carboxyvinyltransferase, acetohydroxy-acid-synthase *mutagenesis* method, useful for producing herbicide resistance to e.g. sulfonylurea**

ABSTRACT: A *chimeric* *oligonucleotide* (I) containing a DNA sequence flanked by RNA sequences is new. (I) is homologous to a *plant* DNA sequence (II), and can form a duplex. Also claimed are: introducing an alteration to a target sequence in a *plant* using (I); inactivating (II) using (I); *plants* and their seeds having a genomic DNA sequence altered by this method; and creating a predetermined nucleotide pair mismatch in a target sequence of a *plant* cell genome. (I) are used to introduce targeted alterations or mismatches into *plants* , particularly maize (Zea mays), e.g. for gene correction, site-specific *mutagenesis* , gene knockout (particularly for the removal of marker genes introduced during *plant* transformation) and allelic replacement, especially for generating *plants* with herbicide resistance. The method is especially used to confer herbicide resistance to sulfonylureas or imidazolinones by alteration of the 3-phosphoshikimate-1-carboxyvinyltransferase (EC...

DESCRIPTORS: targeted maize 3-phosphoshikimate-1-carboxyvinyltransferase, acetohydroxy-acid-synthase *mutagenesis*, knockout method, *chimeric* *oligonucleotide* particle bombardment, appl. sulfonylurea, imidazolinone herbicide resistance *plant* cereal grass Zea mays enzyme EC-4.1.3.18 EC-2.5.1.19 pesticide resistance DNA sequence RNA sequence crop improvement biolistic (Vol...

...SECTION: *Plant* Genetic Engineering; GENETIC ENGINEERING AND FERMENTATION

3/3,K/21 (Item 2 from file: 357)

DIALOG(R)File 357:Derwent Biotechnology Abs

0221747 DBA Accession No.: 98-03344 PATENT

Oligonucleotide for altering a genomic sequence in eukaryotes- *chimeric* *mutation* vector *oligonucleotide* analog for site-directed *mutagenesis*, gene therapy, gene targeting or transgenic *plant* production

AUTHOR: Kmiec E B

CORPORATE SOURCE: Philadelphia, PA, USA.

PATENT ASSIGNEE: Univ.Philadelphia-Thomas-Jefferson 1997

PATENT NUMBER: WO 9748714 PATENT DATE: 971224 WPI ACCESSION NO.: 98-063068 (9806)

PRIORITY APPLIC. NO.: US 664487 APPLIC. DATE: 960617

NATIONAL APPLIC. NO.: WO 97US10538 APPLIC. DATE: 970616

LANGUAGE: English

- *chimeric* *mutation* vector *oligonucleotide* analog for site-directed *mutagenesis*, gene therapy, gene targeting or transgenic *plant* production

ABSTRACT: A new *oligonucleotide* analog (ON) *chimeric* *mutation* vector for altering a eukaryotic gene contains: a 1st strand of at least 15 bases, with at least 3 nuclease resistant ribo-type bases (2...

... The ON may contain at least 14 bases, or a pair of at least 7-base regions, corresponding to a fragment of a mammal or *plant* gene or its complement. The ON may have a hairpin cap attached to the 1st or 2nd strand, or a linker between the 3'-end of the 1st strand and the 5'-end of the 2nd strand. The ON may contain a *mutator* region, and may be maintained within a cell nucleus to induce site-directed *mutagenesis*, e.g. for gene therapy, gene targeting or transgenic *plant* production. (68pp)

DESCRIPTORS: *chimeric* *mutation* vector *oligonucleotide* analog, appl. site-directed *mutagenesis*, gene therapy, gene targeting, transgenic *plant* construction gene transfer crop improvement (Vol.17, No.7)

...SECTION: *Plant* Genetic Engineering; GENETIC ENGINEERING AND FERMENTATION

3/3,K/22 (Item 1 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

132161785 CA: 132(13)161785u JOURNAL

Gene targeting in plants via site-directed mutagenesis

AUTHOR(S): Kipp, Peter B.; Van Eck, Joyce M.; Beetham, Peter R.; May, Gregory D.

LOCATION: Boyce Thompson Institute for Plant Research Inc., Ithaca, NY, USA

JOURNAL: Methods Mol. Biol. (Totowa, N. J.) DATE: 2000 VOLUME: 133

NUMBER: Gene Targeting Protocols PAGES: 213-221 CODEN: MMBIED ISSN: 1064-3745 LANGUAGE: English PUBLISHER: Humana Press Inc.

3/3,K/23 (Item 2 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

131014845 CA: 131(2)14845q PATENT

site-directed manipulation of herbicide-resistance genes in plants with RNA-DNA chimeric oligonucleotides

INVENTOR(AUTHOR): Baszczynski, Christopher L.; Duesing, John H.; Peterson, David J.; Tagliani, Laura A.; Zhu, Tong; Bowen, Benjamin A.

LOCATION: USA

ASSIGNEE: Pioneer Hi-Bred International, Inc.

PATENT: PCT International ; WO 9925853 A1 DATE: 19990527

APPLICATION: WO 98US24484 (19981116) *US 65628 (19971118) *US 98235 (19980828)

PAGES: 63 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/82A; C12N-015/10B; C12N-015/11B; C07H-021/00B; A01H-005/00B

DESIGNATED COUNTRIES: AL; AM; AT; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CU; CZ; CZ; DE; DE; DK; DK; EE; EE; ES; FI; FI; GB; GE; GH; GM; HR; HU; ID; IL; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SK; SL; TJ; TM; TR; TT; UA; UG; US; UZ; VN; YU; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

3/3,K/24 (Item 3 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

130192713 CA: 130(15)192713g PATENT

The use of mixed duplex oligonucleotides to effect localized genetic changes in plants

INVENTOR(AUTHOR): Arntzen, Charles J.; Kipp, Peter B.; Kumar, Ramesh; May, Gregory D.

LOCATION: USA

ASSIGNEE: Kimeragen, Inc.

PATENT: PCT International ; WO 9907865 A1 DATE: 19990218

APPLICATION: WO 98US16267 (19980805) *US 54836 (19970805)

PAGES: 53 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/82A; C12N-015/84B; C12N-015/82B; C12N-005/04B; A01H-004/00B

DESIGNATED COUNTRIES: AL; AM; AU; BA; BB; BG; BR; CA; CN; CU; CZ; EE; GE; HU; IL; IS; JP; KP; KR; LC; LK; LR; LT; LV; MG; MK; MN; MX; NO; NZ; PL; RO; SG; SI; SK; SL; TJ; TM; TR; TT; UA; UZ; VN; YU; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD; SZ; UG; ZW; AT; BE; CH ; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

3/3,K/25 (Item 4 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

128098547 CA: 128(9)98547t PATENT

Chimeric mutational vectors having non-natural nucleotides for use in gene therapy and creation of transgenic organisms

INVENTOR(AUTHOR): Kmiec, Eric B.

LOCATION: USA

ASSIGNEE: Thomas Jefferson University

PATENT: PCT International ; WO 9748714 A1 DATE: 19971224

APPLICATION: WO 97US10538 (19970616) *US 664487 (19960617)

PAGES: 68 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C07H-021/00A; C12P-019/34B DESIGNATED COUNTRIES: AL; AM; AU; AZ; BA; BB; BG; BR; BY; CA; CN; CU; CZ; EE; GE; GH; HU; IL; IS; JP; KG; KP; KR; KZ; LC; LK; LR; LT; LV; MD; MG; MK; MN; MX; NO; NZ; PL; RO; RU; SG; SI; SK; TJ; TM; TR; TT; UA; UZ; VN; YU; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH; KE; LS ; MW; SD; SZ; UG; ZW; AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; ML; MR; NE; SN; TD; TG

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